

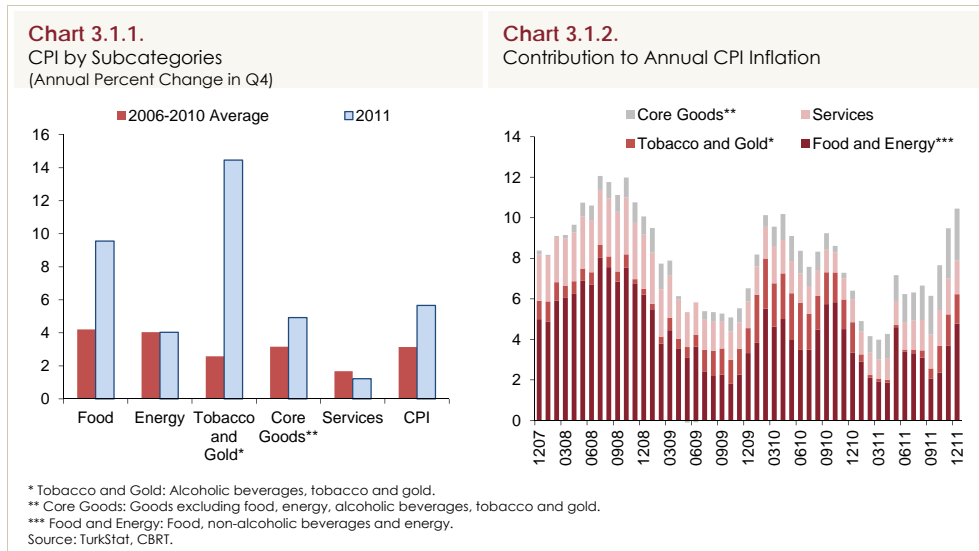
3. Inflation Developments

3.1. Inflation

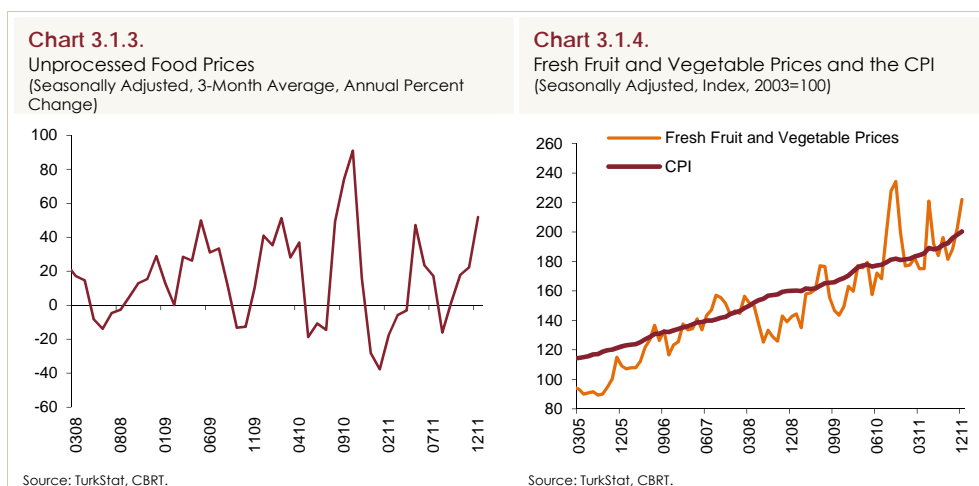
Annual CPI inflation in 2011 surged by 4 points year-on-year, reaching 10.45 percent. The pass-through from the significant depreciation of the Turkish lira, especially to core goods prices, was the major factor to cause a rising CPI inflation. The declining contribution by aggregate demand conditions to disinflation as well as higher food inflation relative to previous years were also influential on the rise in consumer inflation. Despite registering a higher rate of growth compared to the last couple years, services prices were in tandem with the medium-term targets throughout the year. Soaring administered prices in the last quarter amid SCT rate increases in some items and energy price adjustments also added to the increase in the annual inflation. Thus, CPI inflation in 2011 greatly surpassed the inflation target, which was 5.5 percent.

Inflation in the last quarter significantly exceeded the October Inflation Report forecasts due to acceleration of the unprocessed food prices. Further depreciation of the Turkish lira as a result of the ongoing deterioration in risk appetite also contributed to the higher-than-anticipated rise in inflation. Meanwhile, services prices maintained their relatively mild course, putting a cap on the rise in core inflation indicators.

Across subcategories, quarterly price changes in food, alcohol-tobacco and gold as well as core goods went far beyond the average of the past years in the last quarter (Chart 3.1.1). Food prices, and in particular, unprocessed food prices with an annual inflation reaching 20 percent due to low base effect coupled with the high price increases, have been the major contributors to the rise in annual inflation during this period, with their contribution to annual inflation posting a quarter-on-quarter increase by 2.68 points (Chart 3.1.2). Alcoholic beverages and tobacco prices recorded significant increases due to SCT rate adjustments in October, with their contribution to annual inflation registering a quarter-on-quarter increase by 1.11 points. Moreover, lagged effects of the depreciation in the Turkish lira continued to be influential on core goods prices, especially on durables, and the contribution of core goods to annual inflation increased by 0.64 points in this period. Meanwhile, services prices maintained a moderate course in the last quarter remaining below the average of the past years.

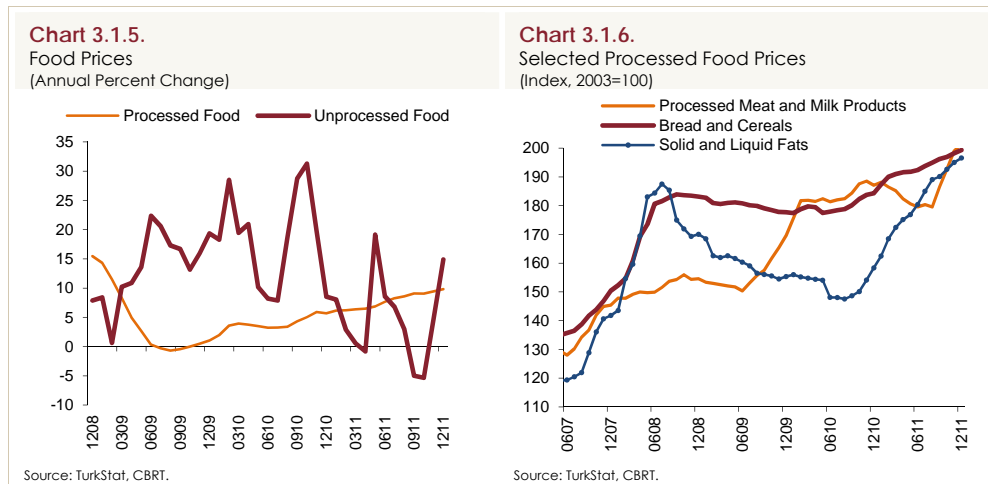


October Inflation Report stated that food inflation would record a notable increase in the last quarter due to the base effect. However, with unprocessed food prices posting an increase by 17.23 percent in this period, mainly on the prices of fresh fruits and vegetables recording the highest increase in the index history in the last quarter, the rise in food inflation surpassed the forecasts (Charts 3.1.3 and 3.1.4). Thus, by the year-end, unprocessed food inflation contributed 1.94 points to annual CPI inflation. The persisting excessive volatility in the unprocessed food prices due to measurement biases as well as structural factors continue to create substantial uncertainty on food prices outlook.¹



¹ Information on the volatility of unprocessed food prices is presented in Box 3.1 of the 2011 January Inflation Report. For detailed analysis, see CBRT Economic Notes No. 10/15 and 10/16.

Unprocessed food inflation increased by 0.75 points to 9.82 percent in the last quarter mainly due to the surge by 9.6 percent in the prices of cheese and dairy products amid the increase in the prices of milk products (Chart 3.1.5). In line with the domestic and international developments, prices of fats and oils, which have followed an uptrend since November 2010, continued to rise, albeit slowly. This rise was influential on the elevated processed food prices across the year (Chart 3.1.6). Moreover, processed food prices continued to register an above-average increases, soaring by 3.30 percent in this period, as the unfavorable effects of the rising TL-denominated import prices posed further pressure on processed food prices (Table 3.1.1). In sum, annual food inflation hit 12.21 percent in 2011, recording the highest year-end figure of the last eight years.



Energy prices went up by 4.03 percent in the last quarter, mainly due to increases in electricity tariffs and natural gas prices (Table 3.1.1). As stated in the October Inflation Report, these increases contributed 0.5 points to annual CPI inflation. Soaring solid fuel prices also led to increases in energy prices in this period. In addition, water tariffs indexed to consumer prices by some municipalities went up. Despite the depreciation of the Turkish lira, domestic fuel prices went down by 1.64 percent amid the decline in international oil prices. Thus, fuel prices have been the only item that put a cap on energy inflation in the fourth quarter (Chart 3.1.7). In sum, due to 44 percent increase of the TL-denominated oil prices in 2011, energy prices recorded an annual increase by 10.36 percent (Chart 3.1.8).

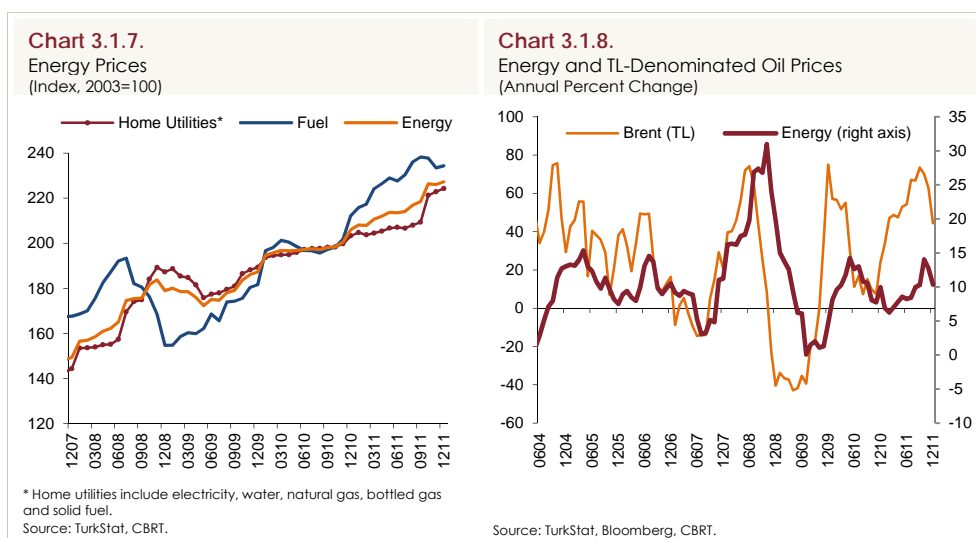


Table 3.1.1.
Prices of Goods and Services
(Quarterly and Annual Percent Change)

	2010		2011			
	IV	Annual	I	II	III	IV
CPI	1.55	6.40	1.57	1.83	1.07	5.66
1. Goods	1.64	7.18	1.53	2.05	0.73	7.29
Energy	3.98	9.96	2.27	1.37	2.34	4.03
Food and Non-Alcoholic Beverages	-0.18	7.02	3.77	-2.46	1.18	9.57
Unprocessed Food	-3.05	8.52	5.08	-5.79	-1.00	17.23
Processed Food	2.59	5.68	2.61	0.57	3.03	3.30
Goods (excl. Energy and Food)	2.21	6.09	-0.68	6.32	-0.36	6.93
Core Goods	2.59	1.70	-1.08	7.73	-1.55	4.92
Durable Goods (excl. Gold)	-1.06	0.26	4.26	1.85	3.69	1.90
Alcoholic Beverages, Tobacco and Gold	0.93	24.61	0.81	1.05	4.38	14.46
2. Services	1.31	4.24	1.67	1.22	2.02	1.22
Rent	0.98	3.96	1.08	0.99	1.35	1.21
Restaurants and Hotels	2.30	9.76	1.65	1.80	2.37	2.14
Transport	1.28	7.04	2.28	2.10	3.07	1.73
Communication	2.23	-3.51	1.96	-1.71	0.35	0.47
Other Services*	0.30	3.57	1.61	2.14	2.56	0.65

* Services excluding rents, restaurants, hotels, transport and communication.
Source: TurkStat, CBRT.

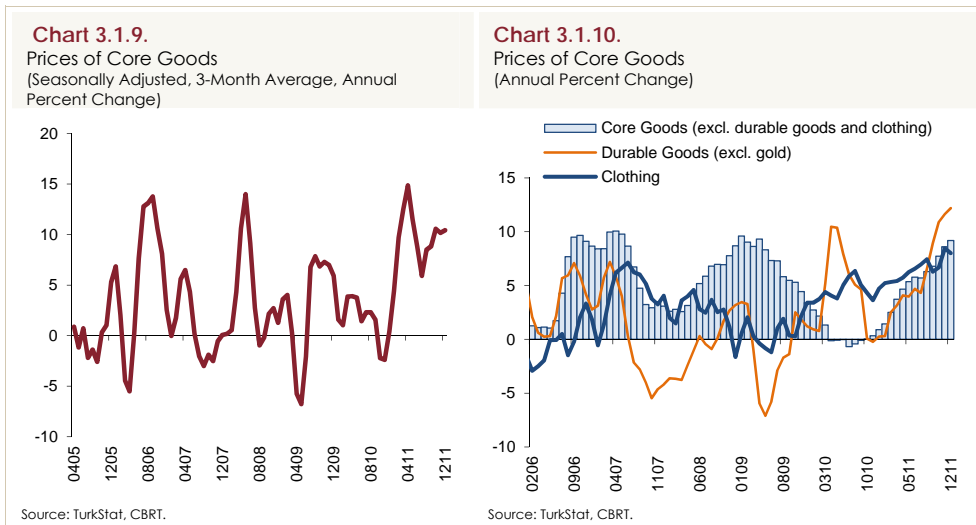
The upward course of the annual core inflation persisted throughout the last quarter due to the lagged effects of the depreciation in the Turkish lira (Chart 3.1.9). Core goods are one of the items with the highest exchange rate pass-through among the CPI subcategories. Hence, core inflation hit 10.09 percent in 2011, remaining well above the historical averages. Furthermore, increases in core prices spilled over into all subcategories, especially to prices of durables like furniture, electrical and non-electrical home appliances in the last quarter (Chart 3.1.10 and Table 3.1.2). Producer price increases were also effective on the soaring durable prices. Moreover, reasonable financing

opportunities across the year also bolstered price increases through increased demand for durables. Clothing inflation, which remained above seasonal averages amid the adopted protective measures in the imports of textiles and ready-to-wear, also contributed to core inflation (Chart 3.1.10). In addition, core inflation excluding clothing and durables also gained pace in this quarter (Table 3.1.2).

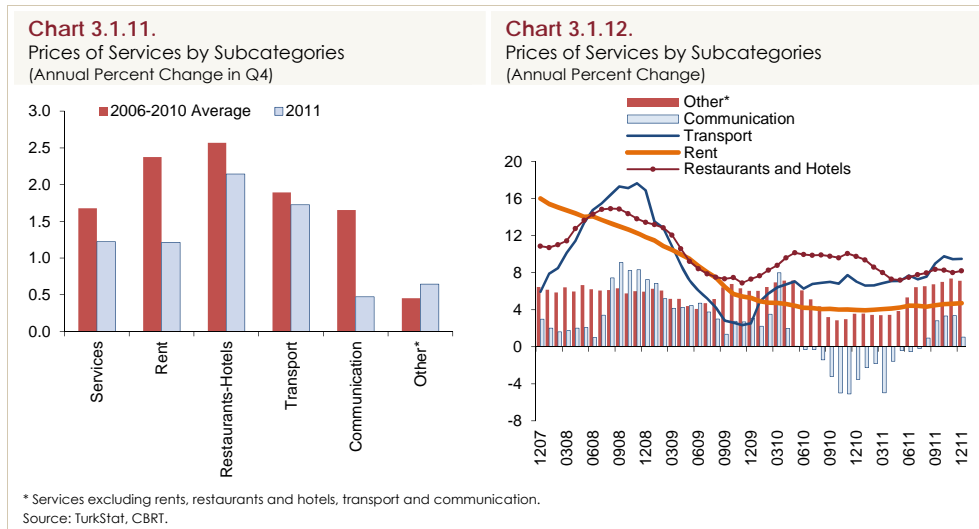
Table 3.1.2.
Prices of Core Goods
(Quarterly and Annual Percent Change)

	2010		2011			
	IV	Annual	I	II	III	IV
Core Goods	2.59	1.70	-1.08	7.73	-1.55	4.92
Clothing and Footwear	9.94	4.72	-12.04	25.08	-12.13	11.72
Durable Goods (excl. Gold)	-1.06	0.26	4.26	1.85	3.69	1.90
Furniture	-1.06	5.94	0.75	5.04	2.88	4.01
Electrical and Non-Electrical Appliances	-0.23	-2.23	2.87	-1.26	0.34	3.29
Automobile	-1.67	-0.26	6.31	2.29	5.68	0.52
Other Durable Goods	0.90	1.79	2.15	2.71	1.85	3.00
Other	1.18	0.91	1.82	2.09	1.54	3.44

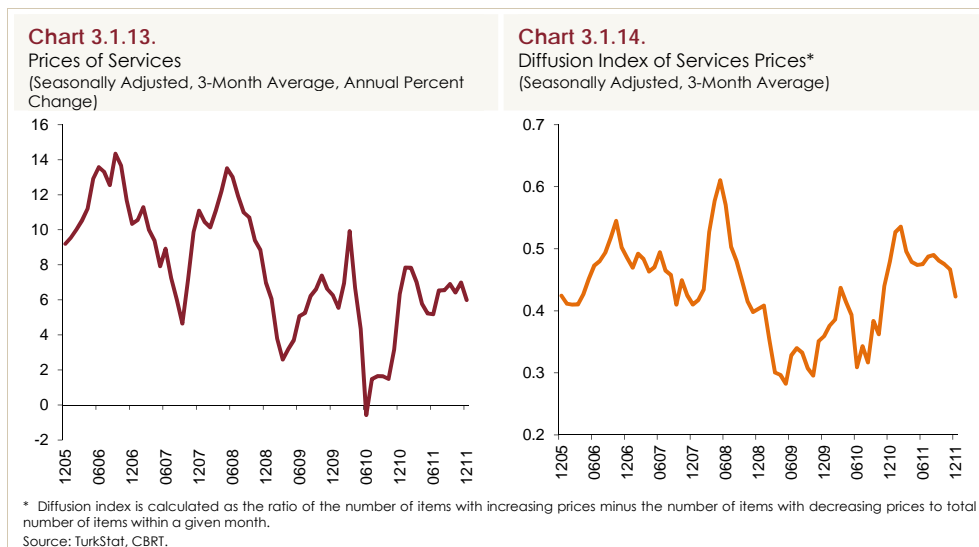
Source: TurkStat, CBRT.



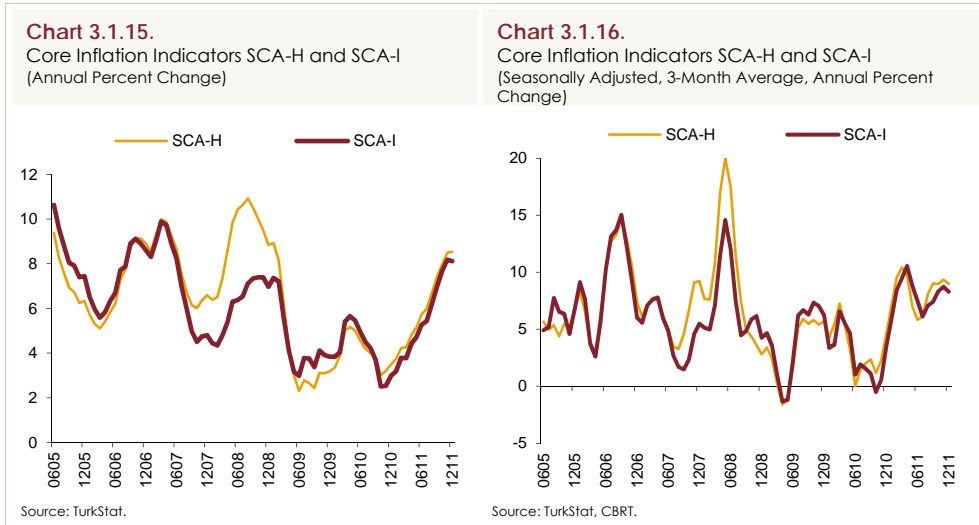
Services prices posted a lower rate of increase by 1.22 percent in the fourth quarter (Chart 3.1.11). Across subcategories, quarterly price increases in rent, restaurants, hotels, transport and communication services in this period remained behind the averages of the previous periods. Annual rate of increase in services prices edged down to 6.27 percent quarter-on-quarter amid the base effect from the communication services (Chart 3.1.12). Despite the persisting lagged effects of the depreciation in the Turkish lira on transport and prices of other services, services prices presented a favorable outlook in the last quarter of the year.



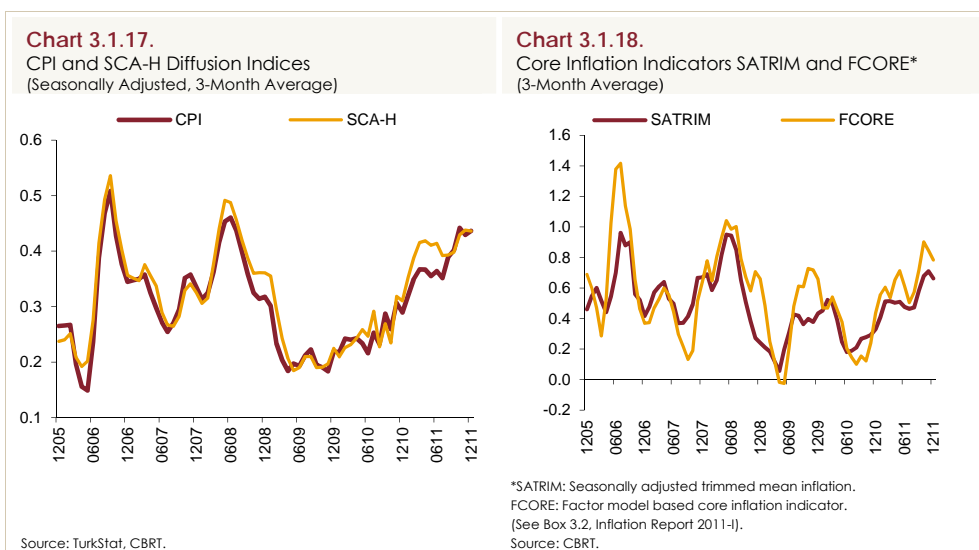
Seasonally adjusted data indicate a slightly decelerating underlying trend of services inflation in the fourth quarter (Chart 3.1.13). Moreover, the diffusion index, which entails information on the extent of the spillover, followed a downtrend in this period (Chart 3.1.14).



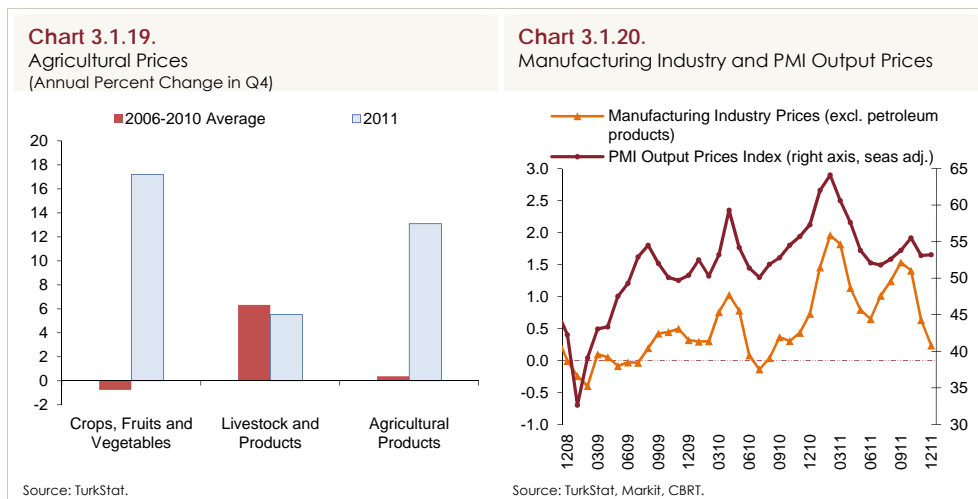
The annual rate of increase in core inflation indicators SCA-H and SCA-I continued to trend upwards in the fourth quarter amid core inflation developments (Chart 3.1.15). Thus, annual SCA-H and SCA-I inflation reached 8.54 and 8.12 percent, respectively, by end-2011, posting a year-on-year increase of around 5 points. Even though seasonally adjusted data indicate an ongoing increase in the underlying inflation over the fourth quarter, core inflation lost pace by December (Chart 3.1.16).



Having increased in the third quarter, diffusion indices for CPI and SCA-H followed a rather flat course in the last quarter (Chart 3.1.17). Furthermore, the ongoing increase of the alternative core inflation measures monitored by the CBRT also lost pace in December (Chart 3.1.18). However, diffusion indices and core inflation indicators still remain above historical averages. Meanwhile, the analysis of the seasonally adjusted inflation and diffusion indices suggest that inflationary pressure stemming from core prices is outstanding. Accordingly, the relatively fast pace of the underlying trend of inflation is mainly driven by the rapidly soaring core prices on relative price changes, while services prices displayed a weaker course compared to previous periods (Box 3.1).

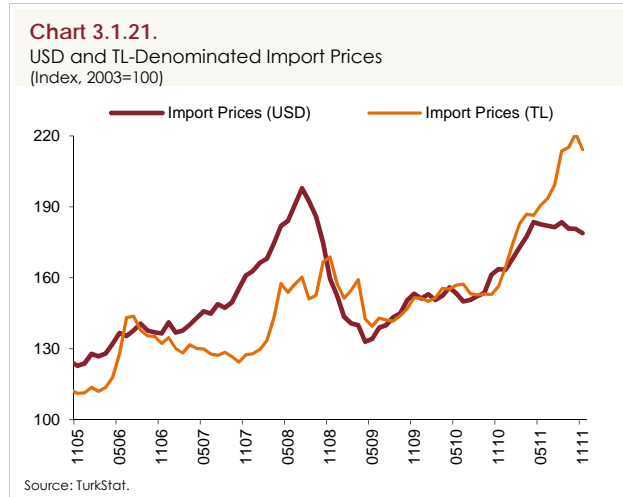


Producer prices soared by 3.28 percent in the fourth quarter of 2011, while annual inflation reached 13.33 percent amid the surge in the prices of fresh fruits and vegetables, which were concurrently reflected on consumer prices (Table 3.1.3). Agricultural prices were up 13.09 percent, while seasonally adjusted data recorded the highest quarterly rate of increase (Chart 3.1.19 and Table 3.1.3). Following a surge in the third quarter, manufacturing industry prices posted a moderate increase of 0.72 percent amid easing commodity prices in the last quarter (Chart 3.1.20). Overall, 2011 was marked by intense cost pressures dominating producer prices, especially through manufacturing industry prices excluding oil, which hit the highest year-end inflation in the index history. The increase by 13.42 percent in manufacturing prices excluding oil was also reflected on consumer prices.



Prices of raw materials had a key role in the last quarter's manufacturing industry price developments. Base metal prices, which were up 31.42 percent in the first three quarters of 2011, posted a decline in the last quarter in line with the developments in the international prices, pulling the manufacturing industry annual inflation down to 24.30 percent. Cotton prices plunged further in the last quarter, bringing the manufacturing prices of textile products down. Thus, manufacturing prices of intermediate goods were down 0.74 percent. Sunflower prices, which led to sizeable increases in the prices of oils in the first half of the year, remained flat in this period together with the prices of wheat, a major input for the manufacturing industry. However, surging milk prices in the last quarter not only affected food manufacturing prices, but were also reflected on consumer prices through the prices of milk, cheese and fats. Meanwhile, the mild course of livestock prices continued to underpin the

decline in the manufacturing prices of meat products. While the cumulative effects of exchange rate developments were most clearly observed on the prices of office equipment and computer manufacturing among capital goods, furniture manufacturing was the major contributor to the rise in the manufacturing prices of durable goods.



The quarterly manufacturing price inflation slowed down in the fourth quarter, with intermediate goods prices experiencing the most notable slowdown, given their sensitivity against international developments. However, domestic developments, especially in agricultural prices, put a cap on the slowdown of the manufacturing price inflation. In sum, the last quarter of 2011 was marked by diminished cost pressures owing to international price developments (Chart 3.1.21).

Table 3.1.3.
PPI and Subcategories
(Quarterly and Annual Percent Change)

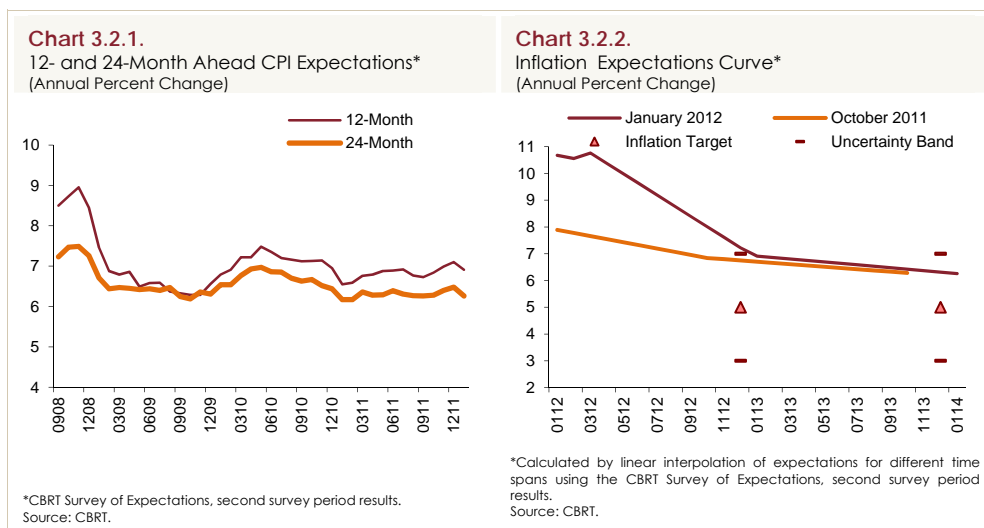
	2010		2011			
	IV	Annual	I	II	III	IV
PPI	2.21	8.87	5.40	0.77	3.31	3.28
Agriculture	0.26	14.52	5.84	-1.73	-6.03	13.09
Crops, Fruits and Vegetables	-3.17	9.20	6.81	-2.67	-9.84	17.18
Livestock and Animal Products	8.21	29.85	-1.26	-0.39	2.68	5.51
Industry	2.64	7.71	5.31	1.30	5.24	1.48
Mining	0.95	7.11	9.70	1.08	4.94	2.93
Manufacturing	2.86	6.62	6.27	1.98	4.98	0.72
Manufacturing (excl. Petroleum)	2.20	5.92	5.55	1.95	4.67	0.70
Manufacturing (excl. Petroleum and Base Metals)	1.90	3.98	4.85	1.53	4.12	1.39
Electricity, Gas and Water	1.32	18.68	-4.08	-4.73	7.89	7.91

Source: TurkStat, CBRT.

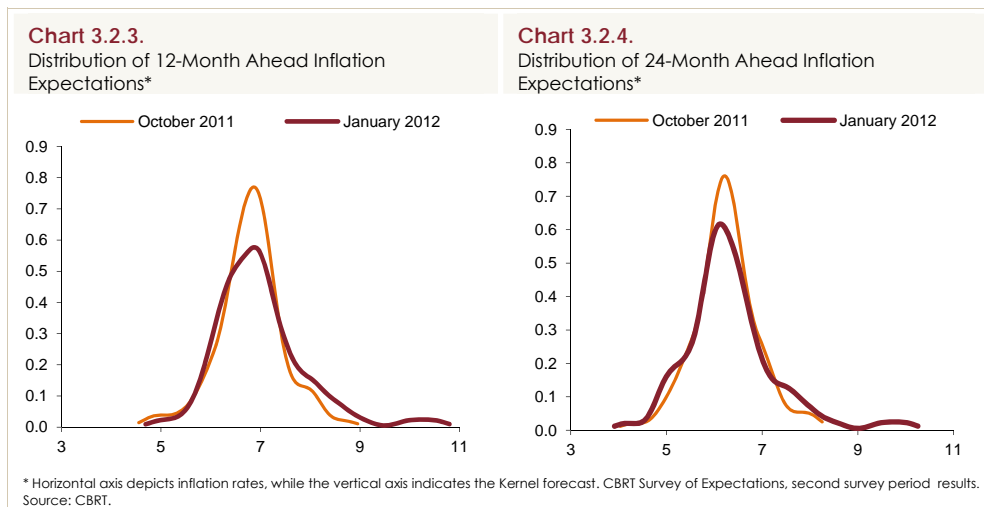
3.2. Expectations

Having remained relatively flat in the first three quarters of 2011, inflation expectations increased significantly in the last quarter amid the surge in annual

CPI inflation. However, as of 2012, medium-term expectations bounced back to 2011 third-quarter levels, despite the current high course of inflation (Chart 3.2.1). This correction is attributed to the additional monetary tightening implemented by the CBRT besides the emphasized discourse that no deterioration in expectations would be allowed. On the other hand, near-term inflation expectations increased significantly quarter-on-quarter (Chart 3.2.2). Currently, inflation expectations continue to hover above the year-end target of 5 percent for 2012 and 2013.



The distribution of survey respondents' for both 12-month and 24-month ahead inflation expectations significantly diverged in this period compared to October (Charts 3.2.3 and Chart 3.2.4).

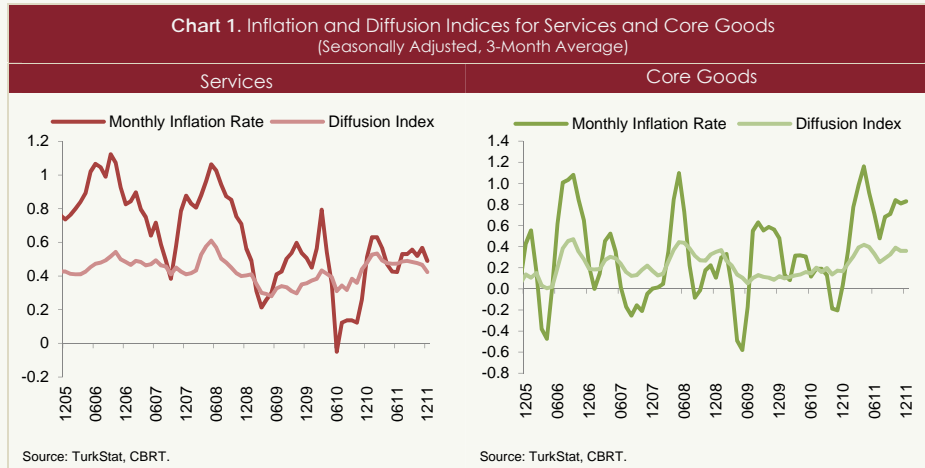


Box
3.1

Analysis of Underlying Inflation by Principal Components

Main inflation developments can be monitored through various indices ranging from inflation rate to diffusion index. Inflation rate denotes the average rate of change in prices, whereas the diffusion index measures the frequency of price changes in a certain basket of goods by subtracting the ratio of goods with price increases from those with price declines. Using these indices that provide two alternative views on price dynamics, this Box analyzes principal components of the inflation dynamics for core goods and services.²

Studies utilizing micro data indicate that average price changes are high in absolute value, and price changes are frequent with declines being observed as many as increases.³ In an economy with fairly flexible pricing behavior and frequency of change depending on time, the magnitude of the changes in prices may occasionally pose a challenge against obtaining a clear outlook regarding the inflation dynamics. Hence, for assessing the underlying inflation, in addition to measures of inflation, diffusion indices can also be used. An increase (decrease) in the diffusion index denotes an increase (decrease) in the proportion of goods with price increases or (decreases). Chart 1 presents the seasonally adjusted inflation and diffusion index figures for core goods and services.

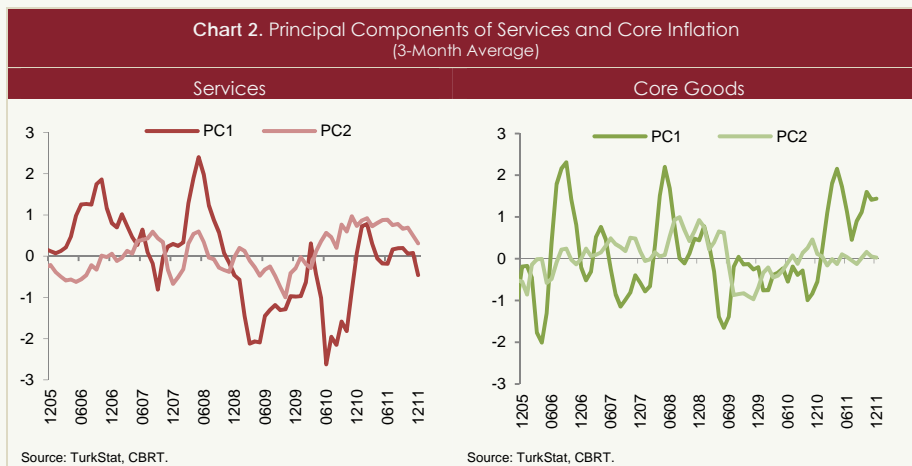


²For further details about the analysis in this Box, see Sevinç (2012).

³For further details, see Özmen and Sevinç (2011).

Even though the magnitude and the frequency of price changes explain various aspects of inflation, these two aspects are inter-related as also depicted in Chart 1. In other words, as the magnitude of average changes in prices increases, the diffusion index also increases. Neither high-rated but uncommon, nor low-rated yet widespread increases can truly capture an inflationary trend. To be more specific, when adjusted for seasonal effects, only price increases which are comparable with respect to magnitude and frequency can provide a clear information about the extent of an inflationary trend.

Deriving an indicator that entails information about the underlying inflation as implied by the relation between inflation and the diffusion index with minimum loss is critical. Principal component analysis yields such a variable that can detect the co-movement between these two series. The first principal component (denoted as PC1) obtained through this analysis provides information on the relation between magnitude and the frequency of the price change (shock).



Principal component series for services and core goods are presented in Chart 2. Accordingly, PC1 points to a recent divergence between services and core goods prices in terms of inflationary pressures. Core goods prices clearly manifest the effect of the recent exchange rate shocks. Moreover, the analysis of the previous periods enables to conclude that exchange rate shocks stand as a strong signal both in terms of the magnitude as well as the frequency of the shock, thus causing exchange-rate-driven temporary price hikes in core goods. Meanwhile, principal component analysis confirms that inflationary pressures on services prices have significantly faded since mid-2011. When compared to previous periods, inflationary pressures are fairly low for services prices, unlike for core prices, which are high despite the limited fall in the last couple of months. It should be noted that inflationary pressures on core goods reached historical-highs through 2011.

PC1 explains for approximately 80 percent of the relationship between inflation and diffusion indicators, while the second principal component (PC2) explains the remaining relationship. Accordingly, for a given month, PC2 is directly and inversely proportional with the diffusion index and inflation, respectively. In other words, PC2 can be interpreted as a diffusion indicator corrected for the inflation rate. Hence, PC2, which can be considered as an alternative indicator for monitoring inflationary pressures, depicts the effect of sectoral price shocks or secondary effects on the diffusion. In this sense, PC2 stands as a significant indicator that entails information that is difficult to detect by merely looking at the diffusion index.

Accordingly, the secondary effects on the diffusion index for the services prices soared amid the robust recovery of the economic activity, reaching high levels in 2011, yet receding slightly in the recent period (Chart 2). The increase in PC2 may point to the increases in firm-specific shocks as well as more flexibility (more frequent price changes compared to rate of price increases) in services prices in the post-crisis period. In fact, the latter explanation is consistent with the resistance of services prices against the recent inflationary pressures. On the other hand, secondary effects on the diffusion index for core goods prices have recently remained low, both compared to the services prices as well as to previous periods. This, together with the sharp increase in PC1, leads one to conclude that the secondary effects of the exchange rate shocks on core goods prices remained limited.

In sum, the recent relative price changes do not pose an inflationary pressure on the services prices, and PC2 even suggests a decline. Indicators for core goods prices confirm that exchange rate shocks have not led to secondary diffusion effects yet. Accordingly, as the effects of these shocks diminish in the forthcoming period, the cumulative effects on consumer prices will likely remain at the minimum, and inflationary pressures may rapidly fade away.

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